Drinking Water Surveillance Program

HARROW-COLCHESTER WATER SUPPLY SYSTEM

Annual Report 1989

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HARROW-COLCHESTER WATER SUPPLY SYSTEM

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1989

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EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

HARROW-COLCHESTER WATER SUPPLY SYSTEM
ANNUAL REPORT 1989

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The Harrow-Colchester Water Supply System uses a conventional treatment plant which treats water from Lake Erie. The process consists of coagulation, flocculation, clarification (upflow clarifier), filtration, disinfection and activated carbon adsorption. This plant has a design capacity of 10 x 1000 m^3/day and serves a population of approximately 4,100.

Raw and Treated water samples at the plant were taken in June and November and were analyzed for the presence of approximately 180 parameters. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organics (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polyaromatic Hydrocarbons, Specific Pesticides and Volatiles).

A summary of results is shown in Table A.

Inorganic and Physical parameters (Laboratory Chemistry, Field Chemistry and Metals) were below any applicable health related Ontario Drinking Water Objectives.

Samples were analyzed in June and Movember for the presence of approximately 110 Organics. Levels did not exceed health related guidelines.

During 1989, the limited DWSP sampling results indicated that the Harrow-Colchester Water Treatment Plant produced good quality water.

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS

SUMMARY TABLE BY SCAN

SCAN	RAW TESTS	RAW POSITIVE	RAW %POSITIVE	TREATED TESTS	TREATED POSITIVE	TREATED %POSITIVE
BACTERIOLOGICAL	6	3	50	6	1	16
CHEMISTRY (FLD)	6	6	100	12	12	100
CHEMISTRY (LAB)	31	25	80	41	29	70
METALS	48	27	56	48	22	45
CHLOROAROMATICS	28	0	0	28	0	0
CHLOROPHENOLS	12	0	0	12	0	0
PAH	31	0	0	31	0	0
PESTICIDES & PCB	68	0	0	68	0	0
PHENOLICS	2	0	0	2	0	0
SPECIFIC PESTICIDES	55	0	0	55	0	0
VOLATILES	58	0	0	58	8	13
TOTAL	345	61		361	72	

NO KNOWN HEALTH RELATED GUIDELINES WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

HARROW-COLCHESTER WATER TREATMENT PLANT
1989 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The DWSP was initiated at the Harrow-Colchester Water Treatment Plant in the spring of 1986. Annual reports were published for 1986 (ISBN 0-7729-2556-7), 1987 and 1988 (ISSN 0840-5239).

This report contains information and results for 1989.

In order to accommodate the increasing number of plants on the DWSP and to facilitate the timely completion of the 1989 annual reports, plants with two or more years of published data will receive an abbreviated annual report. This report maintains the same general format as in previous years but does not include a comprehensive discussion of results. For more detail on the parameters analyzed and discussion of results, consult the 1987 and 1988 reports.

PLANT DESCRIPTION

The Harrow-Colchester Water Treatment Plant is a conventional treatment plant which treats water from Lake Erie. The process consists of coagulation, flocculation, clarification (upflow clarifier), filtration, powdered activated carbon adsorption (for taste and odour control) and disinfection. The Harrow-Colchester plant has a design capacity of 10 x 1000 m^3/day and sample day flows of 1.5 x 1000 m^3/day and 1.6 x 1000 m^3/day and serves a population of approximately 4,100.

The plant location is shown in Figure 1. Plant process details, in a block schematic, are shown in Figure 2. General plant information is presented in Table 2.

SAMPLING AND ANALYSIS

Plant operating personnel perform analyses on the parameters listed in Table 1 for process control.

Water at the Harrow-Colchester Water Treatment plant was sampled for the presence of approximately 180 parameters two times in 1989. Polyaromatic Hydrocarbons and Phenolics are only analyzed in the raw and treated water at the plant. Laboratory analysis was conducted at the Ministry of the Environment facilities in Rexdale, Ontario.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM

SITE LOCATION MAP

HARROW-COLCHESTER WATER SUPPLY SYSTEM

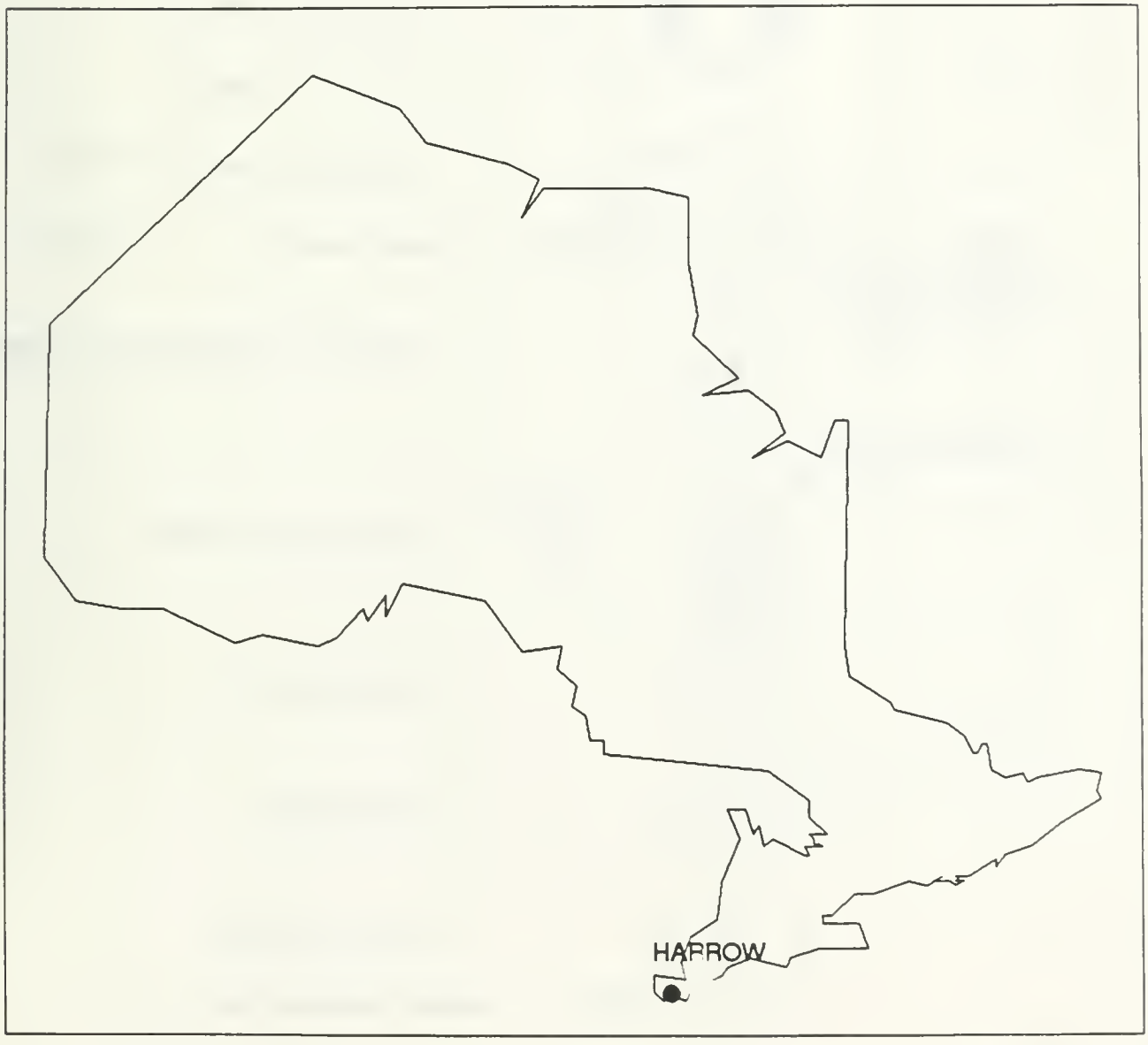

FIGURE 2

HARROW - COLCHESTER SOUTH WTP

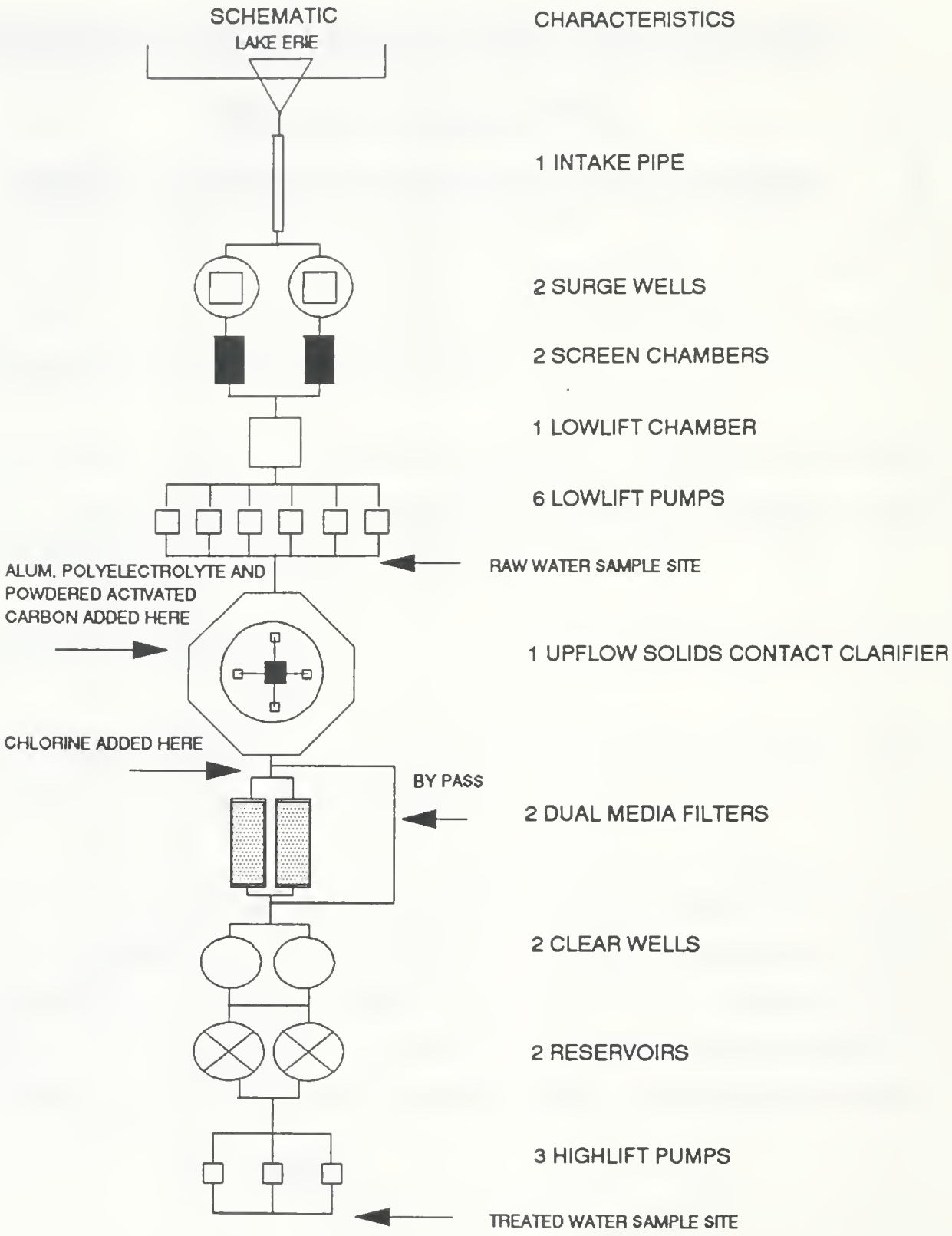

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

IN-PLANT MONITORING HARROW-COLCHESTER WTP 1989

PARAMETER	LOCATION	FREQUENCY
Chlorine residual-free	Treated water	daily
total	Treated water	daily
Ph	Raw water	daily
	Treated water	Daily
Temperature	Raw water	daily
Turbidity	Raw water	daily
	Treated water	daily

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

HARROW-COLCHESTER WATER TREATMENT PLANT

LOCATION:	P. O. BOX 909 HARROW, ONTARIO N6R 1G0 (519-738-3038)
SOURCE:	RAW WATER SOURCE - LAKE ERIE
DESIGN CAPACITY:	10 (1000 M^3/DAY)
OPERATION:	MINISTRY OF ENVIRONMENT
PLANT SUPERINTENDENT:	G. E. JOHNSTON
MINISTRY REGION:	SOUTHWESTERN
DISTRICT OFFICER:	J. DRUMMOND

MUNICIPALITY SERVED	POPULATION
TOWN OF HARROW	2,415
COLCHESTER TOWNSHIP	1,716

RESULTS

Field Chemistry measurements were recorded on the day of sampling and were entered on the DWSP database as submitted by plant personnel.

Table 3 contains information on the sample day retention time, flow rate and treatment chemicals used and their associated dosages.

Table 4 is a summary break-down of the number of water samples analyzed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analyzed on DWSP.

Associated guidelines and detection limits are also supplied on tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters. These are currently under review. When an ODWO is not available, guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS), recently published (ISBN 0-7729-4461-X) by the MOE, catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Many of the compounds detected are naturally occurring or are treatment by-products.

IN THIS REPORT, DISCUSSION IS LIMITED TO THE TREATED AND DISTRIBUTED WATER AND ADDRESSES ONLY THOSE PARAMETERS WITH CONCENTRATIONS ABOVE GUIDELINE VALUES AND ORGANIC PARAMETERS WITH POSITIVE RESULTS.

Results of the treated water indicate that no health related guidelines were exceeded.

Inorganic Parameters

Hardness

The ODWOs indicate that a hardness level of between 80 and 100 mg/L as calcium carbonate for domestic waters, provides an acceptable balance between corrosion and encrustation. Water supplies with a hardness greater than 200 mg/L are considered poor and would possess a tendency to form scale deposits and result in excessive soap consumption.

Organic Parameters

Trihalomethanes

Trihalomethanes (THMs) are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised mainly of Chloroform, Chlorodibromomethane and Dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs. Total THMs detected in the two treated water samples in June and November at 23.2 ug/L and 23.3 ug/L respectively, were well below the ODWO of 350 ug/L.

CONCLUSIONS

No health related guidelines were exceeded during 1989.

Results listed in this report for 1989 are consistent with the results reported for previous years.

Based on the limited DWSP sampling, the treated water was of good quality.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS SAMPLE DAY CONDITIONS FO 1989

SAMPLE DAY CONDITIONS			TREATMENT CHEMICAL DOSAGES (MG/L)			
			COAGULATION	COAGULATION AID	TASTE & ODOUR	POST-CHLORINATION
			ALUM LIQUID	POLYELECTROLYTE	ACTIVATED CARBON POWDER	CHLORINE
DATE	DELAY TIME(HRS)	FLOW (1000M3)				
JUN 21	46.0	2.0	15.00	.10	3.00	.53
NOV 28	26.2	1.6	20.00	.10	3.00	.57

* THE DELAY TIME BETWEEN THE RAW AND TREATED WATER SAMPLING, SHOULD ESTIMATE THE RETENTION TIME

TABLE 4

ORINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
BACTERIOLOGICAL	FECAL COLIFORM MF	2	1	0	.	.	.
	STANDRD PLATE CNT MF	.	.	.	2	0	0
	TOTAL COLIFORM MF	2	0	0	2	0	0
	T COLIFORM BCKGRO MF	2	2	0	2	1	0
*TOTAL SCAN BACTERIOLOGICAL		6	3	0	6	1	0
*TOTAL GROUP BACTERIOLOGICAL		6	3	0	6	1	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	.	.	.	2	2	0
	FLD CHLORINE FREE	.	.	.	2	2	0
	FLD CHLORINE (TOTAL)	.	.	.	2	2	0
	FLD PH	2	2	0	2	2	0
	FLD TEMPERATURE	2	2	0	2	2	0
	FLD TURBIDITY	2	2	0	2	2	0
*TOTAL SCAN CHEMISTRY (FLD)		6	6	0	12	12	0
CHEMISTRY (LAB)	ALKALINITY	1	1	0	2	2	0
	CALCIUM	2	2	0	2	2	0
	CYANIDE	2	0	0	2	0	0
	CHLORIDE	1	1	0	2	2	0
	COLOUR	1	1	0	2	0	2
	CONDUCTIVITY	1	1	0	2	2	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
CHEMISTRY (LAB)	FLUORIDE	2	2	0	2	2	0
	HARDNESS	2	2	0	2	2	0
	IONCAL	2	1	0	2	2	0
	LANGELIERS INDEX	1	1	0	1	1	0
	MAGNESIUM	2	2	0	2	2	0
	SODIUM	2	2	0	2	2	0
	AMMONIUM TOTAL	1	0	0	2	0	0
	NITRITE	1	0	1	2	0	0
	TOTAL NITRATES	1	1	0	2	1	0
	NITROGEN TOT KJELD	2	2	0	2	2	0
	PH	1	1	0	2	2	0
	PHOSPHORUS FIL REACT	1	1	0	2	0	0
	PHOSPHORUS TOTAL	2	2	0	2	1	1
	SULPHATE	1	1	0	2	2	0
	TURBIDITY	2	1	1	2	2	0
*TOTAL SCAN CHEMISTRY (LAB)		31	25	2	41	29	3
METALS	SILVER	2	0	0	2	0	0
	ALUMINUM	2	2	0	2	2	0
	ARSENIC	2	1	1	2	0	2
	BARIUM	2	2	0	2	2	0
	BORON	2	1	1	2	1	1
	BERYLLIUM	2	0	1	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
METALS	CADMIUM	2	0	0	2	0	0
	COBALT	2	0	2	2	0	2
	CHROMIUM	2	1	1	2	1	0
	COPPER	2	2	0	2	2	0
	IRON	2	2	0	2	0	1
	MERCURY	2	0	0	2	0	0
	MANGANESE	2	2	0	2	2	0
	MOLYBDENUM	2	1	1	2	2	0
	NICKEL	2	0	2	2	0	2
	LEAD	2	2	0	2	0	2
	ANTIMONY	2	1	1	2	2	0
	SELENIUM	2	0	0	2	0	1
	STRONTIUM	2	2	0	2	2	0
	TITANIUM	2	2	0	2	2	0
	THALLIUM	2	0	1	2	0	0
	URANIUM	2	2	0	2	1	1
	VANADIUM	2	2	0	2	2	0
	ZINC	2	2	0	2	1	1
*TOTAL SCAN METALS		48	27	11	48	22	13
*TOTAL GROUP INORGANIC & PHYSICAL		85	58	13	101	63	16
CHLOROAROMATICS	HEXACHLOROBUTADIENE	2	0	0	2	0	0
	123 TRICHLOROBENZENE	2	0	0	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW			TREATED		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHLOROAROMATICS	1234 T-CHLOROBENZENE	2	0	0	2	0	0
	1235 T-CHLOROBENZENE	2	0	0	2	0	0
	124 TRICHLOROBENZENE	2	0	0	2	0	0
	1245 T-CHLOROBENZENE	2	0	0	2	0	0
	135 TRICHLOROBENZENE	2	0	0	2	0	0
	HCB	2	0	0	2	0	0
	HEXACHLOROETHANE	2	0	0	2	0	0
	OCTACHLOROSTYRENE	2	0	0	2	0	0
	PENTACHLOROBENZENE	2	0	0	2	0	0
	236 TRICHLOROTOLUENE	2	0	0	2	0	0
	245 TRICHLOROTOLUENE	2	0	0	2	0	0
	26A TRICHLOROTOLUENE	2	0	0	2	0	0
*TOTAL SCAN CHLOROAROMATICS		28	0	0	28	0	0
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	2	0	0
	2345 T-CHLOROPHENOL	2	0	0	2	0	0
	2356 T-CHLOROPHENOL	2	0	0	2	0	0
	245-TRICHLOROPHENOL	2	0	0	2	0	0
	246-TRICHLOROPHENOL	2	0	0	2	0	0
	PENTACHLOROPHENOL	2	0	0	2	0	0
*TOTAL SCAN CHLOROPHENOLS		12	0	0	12	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW			TREATED		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PAH	PHENANTHRENE	2	0	0	2	0	0
	ANTHRACENE	2	0	0	2	0	0
	FLUORANTHENE	2	0	0	2	0	0
	PYRENE	2	0	0	2	0	0
	BENZO(A)ANTHRACENE	2	0	0	2	0	0
	CHRYSENE	2	0	0	2	0	0
	DIMETH. BENZ(A)ANTHR	0	0	0	0	0	0
	BENZO(E) PYRENE	2	0	0	2	0	0
	BENZO(B) FLUORANTHEN	2	0	0	2	0	0
	PERYLENE	2	0	0	2	0	0
	BENZO(K) FLUORANTHEN	2	0	0	2	0	0
	BENZO(A) PYRENE	1	0	0	1	0	0
	BENZO(G,H,I) PERYLEN	2	0	0	2	0	0
	DIBENZO(A,H) ANTHRAC	2	0	0	2	0	0
	INDENO(1,2,3-C,D) PY	2	0	0	2	0	0
	BENZO(B) CHRYSENE	2	0	0	2	0	0
	CORONENE	2	0	0	2	0	0
*TOTAL SCAN PAH		31	0	0	31	0	0
PESTICIDES & PCB	ALDRIN	2	0	0	2	0	0
	ALPHA BHC	2	0	0	2	0	0
	BETA BHC	2	0	0	2	0	0
	LINDANE	2	0	0	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW			TREATED		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	ALPHA CHLORDANE	2	0	0	2	0	0
	GAMMA CHLORDANE	2	0	0	2	0	0
	DIELDRIN	2	0	0	2	0	0
	METHOXYCHLOR	2	0	0	2	0	0
	ENDOSULFAN 1	2	0	0	2	0	0
	ENDOSULFAN II	2	0	0	2	0	0
	ENDRIN	2	0	0	2	0	0
	ENDOSULFAN SULPHATE	2	0	0	2	0	0
	HEPTACHLOR EPOXIDE	2	0	0	2	0	0
	HEPTACHLOR	2	0	0	2	0	0
	MIREX	2	0	0	2	0	0
	OXYCHLORDANE	2	0	0	2	0	0
	OPDDT	2	0	0	2	0	0
	PCB	2	0	0	2	0	0
	DDD	2	0	0	2	0	0
	PPDDE	2	0	0	2	0	0
	PPDDT	2	0	0	2	0	0
	AMETRINE	2	0	0	2	0	0
	ATRAZINE	2	0	0	2	0	0
	ATRATONE	2	0	0	2	0	0
	CYANAZINE (BLADEX)	2	0	0	2	0	0
	D-ETHYL ATRAZINE	2	0	0	2	0	0
	D-ETHYL SIMAZINE	2	0	0	2	0	0
	PROMETONE	2	0	0	2	0	0
	PROPAZINE	2	0	0	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW			TREATED		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	PROMETRYNE	2	0	0	2	0	0
	METRIBUZIN (SENCOR)	2	0	0	2	0	0
	SIMAZINE	2	0	0	2	0	0
	ALACHLOR (LASSO)	2	0	0	2	0	0
	METOLACHLOR	2	0	0	2	0	0
*TOTAL SCAN PESTICIDES & PCB		68	0	0	68	0	0
PHENOLICS	PHENOLICS	2	0	2	2	0	1
*TOTAL SCAN PHENOLICS		2	0	2	2	0	1
SPECIFIC PESTICIDES	TOXAPHENE	2	0	0	2	0	0
	2,4,5-T	2	0	0	2	0	0
	2,4-D	2	0	0	2	0	0
	2,4-DB	2	0	0	2	0	0
	2,4 D PROPIONIC ACID	2	0	0	2	0	0
	DICAMBA	2	0	0	2	0	0
	PICHLORAM	0	0	0	0	0	0
	SILVEX	2	0	0	2	0	0
	DIAZINON	2	0	0	2	0	0
	DICHLOROVOS	2	0	0	2	0	0
	CHLORPYRIFOS	2	0	0	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
SPECIFIC PESTICIDES	ETHION	2	0	0	2	0	0
	AZINPHOS-METHYL	0	0	0	0	0	0
	MALATHION	2	0	0	2	0	0
	MEVINPHOS	2	0	0	2	0	0
	METHYL PARATHION	2	0	0	2	0	0
	METHYLTRITHION	2	0	0	2	0	0
	PARATHION	2	0	0	2	0	0
	PHORATE	2	0	0	2	0	0
	RELDAN	2	0	0	2	0	0
	RONNEL	2	0	0	2	0	0
	AMINOCARB	0	0	0	0	0	0
	BENOMYL	1	0	0	1	0	0
	BUX	0	0	0	0	0	0
	CARBOFURAN	2	0	0	2	0	0
	CICP	2	0	0	2	0	0
	DIALLATE	2	0	0	2	0	0
	EPTAM	2	0	0	2	0	0
	IPC	2	0	0	2	0	0
	PROPOXUR	2	0	0	2	0	0
	CARBARYL	2	0	0	2	0	0
	BUTYLATE	2	0	0	2	0	0
*TOTAL SCAN SPECIFIC PESTICIDES		55	0	0	55	0	0
VOLATILES	BENZENE	2	0	0	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW			TREATED		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	TOLUENE	2	0	1	2	0	2
	ETHYLBENZENE	2	0	0	2	0	0
	P-XYLENE	2	0	0	2	0	0
	M-XYLENE	2	0	0	2	0	0
	O-XYLENE	2	0	0	2	0	0
	STYRENE	2	0	1	2	0	0
	1,1 DICHLOROETHYLENE	2	0	0	2	0	0
	METHYLENE CHLORIDE	2	0	0	2	0	0
	T1,2DICHLOROETHYLENE	2	0	0	2	0	0
	1,1 DICHLOROETHANE	2	0	0	2	0	0
	CHLOROFORM	2	0	0	2	2	0
	111, TRICHLOROETHANE	2	0	1	2	0	0
	1,2 DICHLOROETHANE	2	0	0	2	0	0
	CARBON TETRACHLORIDE	2	0	0	2	0	0
	1,2 DICHLOROPROPANE	2	0	0	2	0	0
	TRICHLOROETHYLENE	2	0	0	2	0	0
	DICHLOROBROMOMETHANE	2	0	0	2	2	0
	112 TRICHLOROETHANE	2	0	0	2	0	0
	CHLORODIBROMOMETHANE	2	0	0	2	2	0
	T-CHLOROETHYLENE	2	0	1	2	0	0
	BROMOFORM	2	0	0	2	0	2
	1122 T-CHLOROETHANE	2	0	0	2	0	0
	CHLOROBENZENE	2	0	0	2	0	0
	1,4 DICHLOROBENZENE	2	0	0	2	0	0
	1,3 DICHLOROBENZENE	2	0	0	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM HARROW

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW			TREATED		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	1,2 DICHLOROBENZENE	2	0	0	2	0	0
	ETHLYENE DIBROMIDE	2	0	0	2	0	0
	TOTL TRIHALOMETHANES	2	0	0	2	2	0
*TOTAL SCAN VOLATILES		58	0	4	58	8	4
*TOTAL GROUP ORGANIC		254	0	6	254	8	5
TOTAL		345	61	19	361	72	21

KEY TO TABLE 5 and 6

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)
1. Maximum Acceptable Concentration (MAC)
1+. MAC for Total Trihalomethanes
1*. MAC for Bacteriological Analyses
Poor water quality is indicated when :
- total coliform counts > 0 < 5
- P/A Bottle Test is present after 48 hours
- Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
- Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
- Standard Plate Count should not exceed 500 organisms per ml at 35 ^{0}C within 48 hours

2. Interim Maximum Acceptable Concentration (IMAC)
3. Maximum Desirable Concentration (MDC)
4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.

B HEALTH & WELFARE CANADA (H&W)
1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC
4. Aesthetic Objective (AO) (for xylenes, a total)

C WORLD HEALTH ORGANIZATION (WHO)
1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria
5. Maximum Contaminant Level Goal (MCLG)

F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

H USSR MAXIMUM PERMISSIBLE CONCENTRATION

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

INTERPRETATION OF DATA

The interpretation of analytical results that are obtained from measurements near the limit of detection of the measurement process is subject to greater uncertainty than those at higher concentrations. The principle areas of concern relate to whether the substance has actually been detected, whether it has been properly identified, and whether it is an artifact of the measurement process. In other words, false positives can be caused by the instrumentation or the test procedures used, when in fact these compounds are not present in the sample.

There are several methods to treat data from such measurements:
1. Exclude the low-level data because of this uncertainty factor. Studies of long-term environmental trends and modelling may however, be adversely affected by the exclusion of such data.
2. Qualify these data so the user is aware of the greater uncertainty associated with their use.

For the Drinking Water Surveillance Program, measurements near the limit of detection of the measurement process are reported with the code "<T". Results qualified by "W" indicate a zero measurement. These results are reported for purposes of modelling and long-term trend analysis and no significance should be attributed to a single determination of a substance below "T" (a single determination may well be a false positive). Repeat analysis or additional data are needed before it can be stated with certainty that the substance in question was truly present. On the other hand, it is less likely that repeated detection of a substance at or near the limit of detection at a specific location is solely due to an artifact in the measurement system, and more likely represents a true positive. The average of such data however, is still only an estimate of the amount of substance present subject to the possible biases of the method used.

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!IV	No Data: Inverted Septum
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded

!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RE	No Data: Received Empty
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours

T# (T06) Result Taken After # Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM	
	RAW	TREATED		
BACTERIOLOGICAL				
FECAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = 0 (A1)
JUN	BDL	.		
NOV	2	.		
STANDRD PLATE CNT MF ( )			DET'N LIMIT =	GUIDELINE =
JUN	.	3 <=>		
NOV	.	0 <=>		
TOTAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = 5/100ML(A1)
JUN	BDL	0		
NOV	600 <=>	0		
T COLIFORM BCKGRD MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = N/A
JUN	48000 >	24		
NOV	42000 A3C	0		

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM	
	RAW	TREATED		
CHEMISTRY (FLD)				
FLD CHLORINE (COMB) ( )			DET'N LIMIT =	GUIDELINE =
JUN	.	.050		
NOV	.	.080		
FLD CHLORINE FREE ( )			DET'N LIMIT =	GUIDELINE =
JUN	.	.480		
NOV	.	.490		
FLD CHLORINE (TOTAL) ( )			DET'N LIMIT =	GUIDELINE =
JUN	.	.530		
NOV	.	.570		
FLD PH (DMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5(A4)
JUN	7.900	7.200		
NOV	7.800	7.110		
FLD TEMPERATURE (DEG.C)			DET'N LIMIT = N/A	GUIDELINE = 15 (A1)
JUN	19.600	20.400		
NOV	4.000	5.300		
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A	GUIDELINE = 1.0 (A1)
JUN	2.300	.120		
NOV	13.000	.090		

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED		
CHEMISTRY (LAB)				
ALKALINITY (MG/L)			DET'N LIMIT = .200	GUIDELINE = 30-500 (A4)
JUN	84.700	78.800		
NOV	!!S	79.400		
CALCIUM (MG/L)			DET'N LIMIT = .100	GUIDELINE = 100 (F2)
JUN	30.400	30.800		
NOV	35.400	35.800		
CHLORIDE (MG/L)			DET'N LIMIT = .200	GUIDELINE = 250 (A3)
JUN	12.100	13.100		
NOV	!!S	19.100		
COLOUR (HZU)			DET'N LIMIT = .5	GUIDELINE = 5.0 (A3)
JUN	2.500	.500 <T		
NOV	!!S	.500 <T		
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1	GUIDELINE = 400 (F2)
JUN	245	250		
NOV	!!S	273		
FLUORIDE (MG/L)			DET'N LIMIT = .01	GUIDELINE = 2.400 (A1)
JUN	.080	.080		
NOV	.080	.060		
HARDNESS (MG/L)			DET'N LIMIT = .500	GUIDELINE = 80-100 (A4)
JUN	108.000	108.000		
NOV	121.000	122.000		
IONCAL (DMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
JUN	3.425	.286		
NOV	.000 NAF	4.369		
LANGELIERS INDEX (DMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
JUN	.043	-.024		
NOV	.	.045		
MAGNESIUM (MG/L)			DET'N LIMIT = .050	GUIDELINE = 30 (F2)
JUN	7.700	7.600		
NOV	7.900	7.900		

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED		
SODIUM (MG/L)			DET'N LIMIT = .200	GUIDELINE = 200 (C3)
JUN	6.800	6.400		
NOV	9.000	8.200		
NITRITE (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 1.000 (A1)
JUN	.004 <T	BDL		
NOV	IIS	BDL		
TOTAL NITRATES (MG/L)			DET'N LIMIT = .020	GUIDELINE = 10.000 (A1)
JUN	.280	.390		
NOV	IIS	BDL		
NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = .020	GUIDELINE = N/A
JUN	.190	.120		
NOV	.260	.100		
PH (DIMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5(A4)
JUN	8.050	8.010		
NOV	IIS	8.020		
PHOSPHORUS FIL REACT (MG/L)			DET'N LIMIT = .0005	GUIDELINE = N/A
JUN	.003	BDL		
NOV	IIS	BDL		
PHOSPHORUS TOTAL (MG/L)			DET'N LIMIT = .002	GUIDELINE = .40 (F2)
JUN	.018	.010		
NOV	.031	.004 <T		
SULPHATE (MG/L)			DET'N LIMIT = .200	GUIDELINE = 500. (A3)
JUN	14.910	22.130		
NOV	IIS	26.410		
TURBIDITY (FTU)			DET'N LIMIT = .02	GUIDELINE = 1.00 (A1)
JUN	3.800	.880		
NOV	.120 <T	.550		

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

WATER TREATMENT PLANT — DISTRIBUTION SYSTEM -

	RAW	TREATED	
METALS			
ALUMINUM (UG/L)			DET'N LIMIT = .050 GUIDELINE = 100.(A4)
JUN	61.000	99.000	
NOV	160.000	30.000	
ARSENIC (UG/L)			DET'N LIMIT = 0.050 GUIDELINE = 50.0 (A1)
JUN	1.200	.660 <T	
NOV	.510 <T	.260 <T	
BARIUM (UG/L)			DET'N LIMIT = 0.020 GUIDELINE = 1000. (A1)
JUN	18.000	19.000	
NOV	18.000	17.000	
BORON (UG/L)			DET'N LIMIT = 0.200 GUIDELINE = 5000. (A1)
JUN	27.000	26.000	
NOV	16.000 <T	18.000 <T	
BERYLLIUM (UG/L)			DET'N LIMIT = 0.010 GUIDELINE = N/A
JUN	BDL	BDL	
NOV	.030 <T	BDL	
COBALT (UG/L)			DET'N LIMIT = 0.020 GUIDELINE = N/A
JUN	.210 <T	.170 <T	
NOV	.280 <T	.070 <T	
CHROMIUM (UG/L)			DET'N LIMIT = 0.100 GUIDELINE = 50. (A1)
JUN	3.700	3.600	
NOV	.160 <T	BDL	
COPPER (UG/L)			DET'N LIMIT = .100 GUIDELINE = 1000 (A3)
JUN	63.000	1.100	
NOV	67.000	1.200	
IRON (UG/L)			DET'N LIMIT = 4.000 GUIDELINE = 300. (A3)
JUN	66.000	5.100 <T	
NOV	310.000	BDL	
MANGANESE (UG/L)			DET'N LIMIT = .050 GUIDELINE = 50.0 (A3)
JUN	4.600	2.300	
NOV	16.000	2.200	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW		TREATED	
MOLYBDENUM (UG/L)				DET'N LIMIT = 0.020 GUIDELINE = N/A
JUN	.960		1.100	
NOV	.350	<T	.540	
NICKEL (UG/L)				DET'N LIMIT = 0.100 GUIDELINE = 50. (F3)
JUN	1.100	<T	.780	<T
NOV	1.200	<T	.200	<T
LEAD (UG/L)				DET'N LIMIT = 0.050 GUIDELINE = 50. (A1)
JUN	.820		.190	<T
NOV	1.600		.040	<T
ANTIMONY (UG/L)				DET'N LIMIT = .050 GUIDELINE = 146. (D4)
JUN	.750		.780	
NOV	.190	<T	.420	
SELENIUM (UG/L)				DET'N LIMIT = 0.200 GUIDELINE = 10. (A1)
JUN	BDL		1.600	<T
NOV	BDL		BDL	
STRONTIUM (UG/L)				DET'N LIMIT = .050 GUIDELINE = N/A
JUN	120.000		120.000	
NOV	110.000		110.000	
TITANIUM (UG/L)				DET'N LIMIT = .050 GUIDELINE = N/A
JUN	4.700		3.500	
NOV	4.600		3.000	
THALLIUM (UG/L)				DET'N LIMIT = .010 GUIDELINE = 13. (D4)
JUN	BDL		BDL	
NOV	.020	<T	BDL	
URANIUM (UG/L)				DET'N LIMIT = .020 GUIDELINE = 100.(B1)
JUN	.560		.230	
NOV	.220		.070	<T
VANADIUM (UG/L)				DET'N LIMIT = .050 GUIDELINE = N/A
JUN	.510		.880	
NOV	.680		.590	
ZINC (UG/L)				DET'N LIMIT = .001 GUIDELINE = 5000. (A3)

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM
	RAW	TREATED	
JUN	5.300	2.300	
NOV	8.200	.850	<T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

WATER TREATMENT PLANT DISTRIBUTION SYSTEM

	RAW	TREATED
PHENOLICS (UG/L)		
JUN	.200 <T	.200 <T
NOV	.600 <T	BDL

DET'N LIMIT = 0.2 GUIDELINE = 2.00 (A3)

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM HARROW-COLCHESTER SOUTH WSS 1989

WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	
VOLATILES			
TOLUENE (UG/L)			DET'N LIMIT = .050 GUIDELINE = 24.0 (B4)
JUN	.100 <T	.050 <T	
NOV	BDL	.050 <T	
STYRENE (UG/L)			DET'N LIMIT = .050 GUIDELINE = 46.5 (D2)
JUN	.050 <T	BDL	
NOV	BDL	BDL	
CHLOROFORM (UG/L)			DET'N LIMIT = .100 GUIDELINE = 350 (A1+)
JUN	BDL	11.000	
NOV	BDL	7.700	
111, TRICHLOROETHANE (UG/L)			DET'N LIMIT = .020 GUIDELINE = 200 (D1)
JUN	.040 <T	BDL	
NOV	BDL	BDL	
DICHLOROBROMOMETHANE (UG/L)			DET'N LIMIT = .050 GUIDELINE = 350 (A1+)
JUN	BDL	6.800	
NOV	BDL	7.500	
CHLORODIBROMOMETHANE (UG/L)			DET'N LIMIT = .100 GUIDELINE = 350 (A1+)
JUN	BDL	4.800	
NOV	BDL	7.100	
T-CHLOROETHYLENE (UG/L)			DET'N LIMIT = .050 GUIDELINE = 10.0 (C2)
JUN	.100 <T	BDL	
NOV	BDL	BDL	
BROMOFORM (UG/L)			DET'N LIMIT = .200 GUIDELINE = 350 (A1+)
JUN	BDL	.600 <T	
NOV	BDL	1.000 <T	
TOTL TRIHALOMETHANES (UG/L)			DET'N LIMIT = .500 GUIDELINE = 350 (A1)
JUN	BDL	23.200	
NOV	BDL	23.300	

TRACE LEVELS OF TOLUENE ARE LABORATORY ARTIFACTS DERIVED FROM THE ANALYTICAL METHODOLOGY.

TRACE LEVELS OF STYRENE ARE CONSIDERED TO BE LABORATORY ARTIFACTS RESULTING FROM THE LABORATORY SHIPPING CONTAINERS.

Table 6

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
BACTERIOLOGICAL			
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	0 (A1)
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML(A1)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXACHLOROBUTADIENE	NG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	3800 (D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000 (D4)
HEXACHLOROBENZENE	NG/L	1.0	10. (C1)
HEXACHLOROETHANE	NG/L	1.000	1900. (D4)
OCTACHLOROSTYRENE	NG/L	1.000	N/A
PENTACHLOROBENZENE	NG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	2000. (B4)
PENTACHLOROPHENOL	NG/L	50.	30000. (B4)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD PH	DMSNLESS	N/A	6.5-8.5(A4)
FIELD TEMPERATURE	^{o}C	N/A	<15 ^{o}C(A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500(A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20(A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100(A4)
MAGNESIUM	MG/L	.05	30. (F2)
SODIUM	MG/L	.20	200. (C3)
AMMONIUM TOTAL	MG/L	.002	.05(F2)
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
PH	DMSNLESS	N/A	6.5-8.5(A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40(F2)
SULPHATE	MG/L	.200	500. (A3)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)

ANTIMONY	UG/L	.050	10.	(F3)
ARSENIC	UG/L	.050	50.	(A1)
BARIUM	UG/L	.020	1000.	(A1)
BORON	UG/L	.200	5000.	(A1)
BERYLLIUM	UG/L	.010	0.20	(H)
CADMIUM	UG/L	.050	5.0	(A1)
COBALT	UG/L	.020	1000.	(H)
CHROMIUM	UG/L	.100	50.	(A1)
COPPER	UG/L	.100	1000.	(A3)
IRON	UG/L	5.0	300.	(A3)
MERCURY	UG/L	.01	1.0	(A1)
MANGANESE	UG/L	.050	50.	(A3)
MOLYBDENUM	UG/L	.020	500.	(H)
NICKEL	UG/L	.100	50.	(F3)
LEAD	UG/L	.020	50.	(A1)
SELENIUM	UG/L	.200	10.	(A1)
SILVER	UG/L	.020	50.	(A1)
STRONTIUM	UG/L	.100	2000.	(H)
THALLIUM	UG/L	.010	13.	(D4)
TITANIUM	UG/L	.100	N/A	
URANIUM	UG/L	.020	20.	(A2)
VANADIUM	UG/L	.020	100.	(H)
ZINC	UG/L	.020	5000.	(A3)

PHENOLICS

PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0	(A3)

PESTICIDES & PCB

ALDRIN	NG/L	1.0	700.	(A1)
AMETRINE	NG/L	50.	300000.	(D3)
ATRAZINE	NG/L	50.	60000.	(B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700.	(G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300.	(G)
GAMMA HEXACHLOROCYCLOHEXANE(LINDANE)	NG/L	1.0	4000.	(A1)
ALPHA CHLORDANE	NG/L	2.0	7000.	(A1)
GAMMA CHLORDANE	NG/L	2.0	7000.	(A1)
BLADEX	NG/L	100.	10000.	(B3)
DIELDRIN	NG/L	2.0	700.	(A1)
METHOXYCHLOR	NG/L	5.0	900000.	(B1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000.	(D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000.	(D4)
ENDRIN	NG/L	4.0	200.	(A1)
ENDOSULFAN SULPHATE(THIODAN SULPHATE)	NG/L	4.0	N/A	

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
HEPTACHLOR EPOXIDE	NG/L	1.0	3000.	(A1)
HEPTACHLOR	NG/L	1.0	3000.	(A1)
METOLACHLOR	NG/L	500.	50000.	(B3)
MIREX	NG/L	5.0	N/A	
OXYCHLORDANE	NG/L	2.0	N/A	
O,P-DDT	NG/L	5.0	30000.	(A1)
PCB	NG/L	20.0	3000.	(A2)
O,P-DDD	NG/L	5.0	N/A	
PPDDE	NG/L	1.0	30000.	(A1)
PPDDT	NG/L	5.0	30000.	(A1)
ATRATONE	NG/L	50.	N/A	
ALACHLOR	NG/L	500.	35000.	(D2)
PROMETONE	NG/L	50.	52500.	(D3)
PROPAZINE	NG/L	50.	16000.	(D2)
PROMETRYNE	NG/L	50.	1000.	(B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000.	(B2)
SIMAZINE	NG/L	50.	10000.	(B3)

POLYAROMATIC HYDROCARBONS

PHENANTHRENE	NG/L	10.0	N/A	
ANTHRACENE	NG/L	1.0	N/A	
FLUORANTHENE	NG/L	20.0	42000.	(D4)
PYRENE	NG/L	20.0		N/A
BENZO(A)ANTHRACENE	NG/L	20.0	N/A	
CHRYSENE	NG/L	50.0	N/A	
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A	
BENZO(E)PYRENE	NG/L	50.0	N/A	
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A	

PERYLENE	NG/L	10.0	N/A	
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A	
BENZO(A)PYRENE	NG/L	5.0	10.	(B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A	
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A	
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A	
BENZO(B)CHRYSENE	NG/L	2.0	N/A	
CORONENE	NG/L	10.0	N/A	

SPECIFIC PESTICIDES

TOXAPHENE	NG/L	N/A	5000.	(A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	200000.	(B4)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000.	(A1)
2,4-DICHLORORPHENOXYBUTYRIC ACID	NG/L	200.	18000.	(B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A	
DICAMBA	NG/L	100.	120000.	(B1)
PICLORAM	NG/L	100.	190000.	(B3)
SILVEX (2,4,5-TP)	NG/L	50.	10000.	(A1)
DIAZINON	NG/L	20.	20000.	(B1)
DICHLOROVOS	NG/L	20.	N/A	
DURSBAN	NG/L	20.	N/A	
ETHION	NG/L	20.	35000.	(G)
GUTHION(AZINPHOSMETHYL)	NG/L	N/A	20000.	(B1)
MALATHION	NG/L	20.	190000.	(B1)
MEVINPHOS	NG/L	20.	N/A	
METHYL PARATHION	NG/L	50.	7000.	(A1)
METHYLTRITHION	NG/L	20.	N/A	

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
PARATHION	NG/L	20.	50000.	(B1)
PHORATE (THIMET)	NG/L	20.	2000.	(B3)
RELDAN	NG/L	20.	N/A	
RONNEL	NG/L	20.	N/A	
AMINOCARB	NG/L	N/A	N/A	
BENONYL	NG/L	N/A	N/A	
BUX (METALKAMATE)	NG/L	2000.	N/A	
CARBOFURAN	NG/L	2000.	90000.	(B1)
CICP (CHLORPROPHAM)	NG/L	2000.	350000.	(G)
DIALLATE	NG/L	2000.	30000.	(H)
EPTAM	NG/L	2000.	N/A	
IPC	NG/L	2000.	N/A	
PROPOXUR (BAYGON)	NG/L	2000.	90000.	(G)
SEVIN (CARBARYL)	NG/L	200.	90000.	(B1)
SUTAN (BUTYLATE)	NG/L	2000.	245000.	(D3)

VOLATILES

BENZENE	UG/L	.050	5.0	(B1)
TOLUENE	UG/L	.050	24.0	(B4)
ETHYLBENZENE	UG/L	.050	2.4	(B4)
PARA-XYLENE	UG/L	.100	300.	(B4)
META-XYLENE	UG/L	.100	300.	(B4)
ORTHO-XYLENE	UG/L	.050	300.	(B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0	(D1)
ETHLYENE DIBROMIDE	UG/L	.05	.05	G)
METHYLENE CHLORIDE	UG/L	.500	50.	(B1)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	70.	(D5)
1,1-DICHLOROETHANE	UG/L	.100	N/A	
CHLOROFORM	UG/L	.100	350.	(A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200.	(D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0	(D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0	(B1)
1,2-DICHLOROPROPANE	UG/L	.050	6.0	(D5)
TRICHLOROETHYLENE	UG/L	.100	50.	(B1)
DICHLOROBROMOMETHANE	UG/L	.050	350.	(A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60	(D4)
CHLORODIBROMOMETHANE	UG/L	.100	350.	(A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0	(C2)
BROMOFORM	UG/L	.200	350.	(A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17	(D4)
CHLOROBENZENE	UG/L	.100	60.	(D5)
1,4-DICHLOROBENZENE	UG/L	.100	1.0	(B4)
1,3-DICHLOROBENZENE	UG/L	.100	130.	(G)

1,2-DICHLOROBENZENE	UG/L	.050	3.0	(B4)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A	
TOTAL TRIHALOMETHANES	UG/L	.500	350.	(A1)
STYRENE	UG/L	.05	140.	(D5)